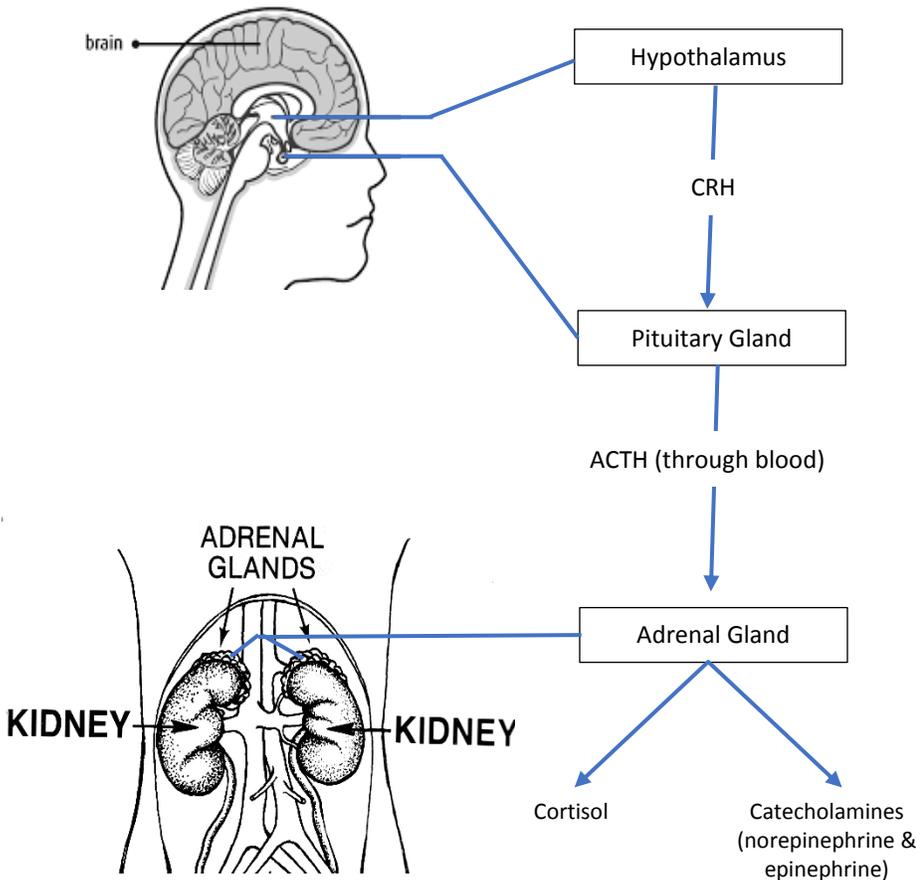




# Stress and Your Body

## Hypothalamic-Pituitary-Adrenal (HPA) Axis

Best known for its role in our body's natural reaction to stress, the HPA Axis includes a group of hormone secreting glands from the nervous and endocrine systems. The primary function of the HPA Axis is to regulate the stress response. Below is a description of what occurs in one's brain and body when experiencing something stressful:



When we are experiencing something stressful, the **hypothalamus** releases a hormone called corticotropin-releasing hormone (**CRH**).

CRH signals the **pituitary gland** to secrete a hormone called adrenocorticotropic hormone (**ACTH**) into the bloodstream.

ACTH travels down to the **adrenal glands** where it prompts the release of different hormones from different parts of the adrenal glands. It causes the secretion of a class of steroid hormones called **glucocorticoids** from the cortex – one of these glucocorticoids is **cortisol**, which plays an important role in the stress response. ACTH also triggers the secretion of **epinephrine** and **norepinephrine** from the adrenal medulla (center of the adrenal glands) – when released from the adrenal glands, they act as hormones.

The release of cortisol causes a number of changes to help the body deal with stress. For example, it helps mobilize energy so the body has energy to cope with a stressor.

Norepinephrine and epinephrine act to keep the body vigilant and able to deal with stress by promoting alertness and increasing blood flow to the skeletal muscles to insure that they are ready to act.

The release of cortisol and catecholamines energize our **fight-or-flight response**.

When cortisol levels in the blood get high, there are sensory receptors in the brain which leads to a “shutting off” response, called the **negative feedback loop**. This process allows us to return to homeostasis (or our body's stable condition).

## Why Does this Matter?

In people who do not experience much stress, the HPA Axis is able to stay healthy and responsive, and allow the body to return to homeostasis. People who experience chronic stress, however, become more resistant to the signals that tell the body to “chill out” (the negative feedback loop). Because of this, the body will continue to release CRH and ACTH which leads to the adrenal glands over-producing stress hormones.

If a stressor is long-lasting or intense, the body’s resources can become depleted, leading to exhaustion or “burnout.” When the body is chronically stressed, the increased production of stress hormones compromises the immune system and can lead to significant mental and physical health problems.

## What Can I Do?

Improve coping skills – reappraisal, restructuring, acceptance

Reduce bodily tension – meditation, relaxation, exercise

Change environment – build social support, religion/spirituality, humor



### Psychological and Counseling Services (PACS)

3 Garrison Avenue, Smith Hall - 3<sup>rd</sup> Floor, Durham, NH 03824

Tel: 603-862-2090 Website: [www.unh.edu/pacs](http://www.unh.edu/pacs)